



The State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES



Thomas S. Burack, Commissioner

WATER CONSERVATION PLAN APPROVAL

April 21, 2015

David Paris
Manchester Water Works
281 Lincoln St.
Manchester, NH 03103

RE: Manchester – Manchester Water Works (PWS ID #: 1471010)
Water Conservation Plan, NHDES # 999819

Dear Mr. Paris:

On April 10, 2015, the New Hampshire Department of Environmental Services (“DES”) Drinking Water and Groundwater Bureau received a Water Conservation Plan (the “WCP”), signed on March 2, 2015, for Manchester Water Works located in Manchester, New Hampshire. Pursuant to RSA 485:61 and Env-Wq 2101, community water systems seeking permits from DES for new sources of groundwater shall submit a water conservation plan to DES. Based on review of the WCP, DES has determined the WCP complies with Env-Wq 2101, *Water Conservation* rules.

Pursuant to Env-Wq 2101, the City of Manchester, the Southern New Hampshire Planning Commission, consecutive water systems, and municipalities receiving water from the system, were provided a copy of the WCP, along with other required materials.

DES approves the WCP based on the following conditions:

1. No later than source activation, all source meters, distribution meters, meters measuring water consuming processes, and any transfer meters and data loggers shall be installed.
2. No later than the source activation date, source meters, and any other meters measuring water consuming process prior to distribution shall be read monthly, no sooner than 27 days and no later than 33 days from the last meter reading.
3. Within three years of source approval, meters shall be installed on all service connections that are not currently metered
4. Service meters shall be read on a quarterly basis.
5. Upon final source approval a water balance, the difference between the system input volume and the metered authorized consumption, shall be reported annually to DES. The

water balance shall be reported by March 1 for the prior year using the online reporting tool.

6. Within 2 years of final source approval, a conservation rate structure shall be implemented and residents billed quarterly.
7. Residents shall be charged based on the amount of water each residence uses and the rate shall be structured so that the cost per gallon(s) is either constant or increasing with the amount of water used.
8. Within one year of source approval, a leak detection and repair program shall be implemented in accordance with the WCP.
9. Within one year of receiving source approval, a water efficiency and outreach program shall be implemented in accordance with the WCP.
10. Within three years of source approval, a meter maintenance plan shall be implemented in accordance with the schedule proposed in the WCP.
11. The system shall continue reporting monthly production volumes to the NHDES Water Use Registration and Reporting program on a quarterly basis.
12. After **June 1, 2015**, the system shall send a letter signed by the new water works director and through certified mail with return receipt requested to all consecutive water systems and privately owned redistribution systems receiving water from MWW and inform the systems of the proposed source activation date, as well as a statement indicating that upon source activation, they will be required to comply with Env-Wq 2101.
13. By **August 1, 2015**, the system shall send copies of the certified return receipts requested in #12., above, to DES.
14. From the date of this WCP Approval, all new non-metallic pipes installed in the system shall be outfitted with detectable tracer tape or detectable tracer wire, or be GPS located and maintained in a GIS system.
15. Every three years from the date of this approval, a *Water Conservation Plan Ongoing Compliance Reporting Form* shall be submitted to DES documenting how the system has maintained compliance with the WCP. The following records shall be maintained by the water system to include with the report:
 - a. A leak log including the date a leak was discovered, the date a leak was repaired, the type of leak (ex. water main, service line, hydrant, valve), the approximate size of the leak (gpm), and the nearest address to the leak.
 - b. The title of water efficiency materials distributed and the date of distribution.

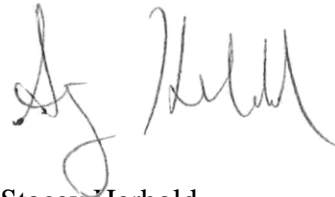
- c. Date of installation and replacement of all meters, as well as testing and calibration record; and
- d. Leak detection survey reports.

16. Revisions to the Plan shall not be implemented without further approval from DES.

The online *Annual Water Balance Reporting Form* and the *Water Conservation Plan Ongoing Compliance Reporting Form* may be located by going to the DES website, www.des.nh.gov, clicking on the "A-Z List" in the top right corner of the page, and scrolling down to Water Conservation.

Please feel free to contact me with any questions at (603) 271-0659 or via e-mail at stacey.herbold@des.nh.gov.

Sincerely,

A handwritten signature in dark ink, appearing to read 'Stacey Herbold', written in a cursive style.

Stacey Herbold
Water Conservation Program
Drinking Water and Groundwater Bureau

cc: David Miller, MWW
Michael Landry, MWW
Guy Chabot, MWW
Southern New Hampshire Planning Commission
Christine Bowman, NHDES
Steve Roy, NHDES

RCVD 4/10/15

CONSERVATION PLAN

DES Env-Wq 2101

MANCHESTER WATER WORKS

AN EXISTING LARGE COMMUNITY WATER SYSTEM

**FOR PROPOSED NEW SOURCE
MERRIMACK RIVER - RADIAL COLLECTOR WELL
KIMBALL DRIVE, HOOKSETT, NEW HAMPSHIRE**

BY:

**MANCHESTER WATER WORKS
281 Lincoln Street
Manchester, New Hampshire 03103**



February 2015

B. Water Conservation Plan Guidance Document
For Existing Large Community Water Systems

WATER CONSERVATION PLAN: MANCHESTER WATER WORKS

A community water system seeking authorization for a new source of water must submit a water conservation plan to the New Hampshire Department of Environmental Services (NHDES) for approval demonstrating how the water system proposes to comply with water conservation standards pursuant to Env-Wq 2101, *Water Conservation* rules. **MANCHESTER WATER WORKS** is an existing large community water system.

Activities outlined in the water conservation plan will be completed by water system personnel under the supervision of a certified water system operator.

I certify that I have read this Water Conservation Plan, understand the responsibilities of the water system as referenced in the plan, and that all information provided is complete, accurate, and not misleading.

Owner Name (print): David Paris, Director, Manchester Water Works

Owner Signature:  Date: 3/2/15

I. Introduction

A. Contact Information

1. Name and location of system: Manchester Water Works – Manchester, New Hampshire
2. Current owner of system and mailing address: Manchester Water Works, 281 Lincoln Street, Manchester, NH, 03103
3. Name and mailing address of designer of water conservation plan: Michael J. Landry, P.E.

B. System Overview

1. Brief description of the project and water sources, including water sources to be developed for non-potable uses such as irrigation: Manchester Water Works is a large community water system that has been in continuous operation since 1874. Historically, MWW has relied upon Lake Massabesic as its sole source of water. In 2013, MWW produced an average of 17.3 MGD of finished drinking water, serving some 160,000 customers in Manchester and surrounding towns. The safe yield from Lake Massabesic is 20.2 MGD. To ensure that MWW is able to have adequate source water for years to come, MWW is in the process of developing a secondary source from the Merrimack River.

The new Merrimack River source will be a radial collector well located on Kimball Drive, Hooksett, New Hampshire, along the west bank of the Merrimack River. It is estimated that this source will be capable of providing up to 7.2 MGD, which will supplement the Lake Massabesic source. An on-site water treatment plant will be designed and constructed once the quality and characteristics of the water taken from the radial collector well have been quantified. All of the water taken from the radial collector well will be treated to finished

drinking water standards and introduced into the MWW distribution system for consumption. No water will be used for non-potable uses.

2. Name designation of each proposed water source: Radial Collector Well, Merrimack River, Kimball Drive, Hooksett, New Hampshire

3. Number of connections proposed for each of the following classes: No new connections are proposed as part of developing the new source. The following numbers represent existing services.

- a) Residential: 28,279
- b) Industrial/commercial/institutional: 1,867
- c) Municipal: 207

4. There are 15 consecutive water systems or privately owned redistribution systems, including : Grasmere Village Water Precinct (2); Town of Derry; Central Hooksett Water Precinct; Hillsborough County Complex; Saint Anselm College; Wellington Hill Apartments; Manchester VA Medical Center; Bedford Hills; and the following six systems are operated by Pennichuck East Utility, Inc.: Smythe Woods; Londonderry; Springwood Hills; Brook Park Estates; Little Pond Estates; and Powder Hill. (See Appendix B for Contact Information.)

5. Description of any connections that receive more than 20,000 gpd: There are 20 customers within the existing large community water system who consume more than 20,000 gpd at a single location, some of which have more than one service connection, such as the Mall of New Hampshire. The four largest consecutive water systems consume water at rates from 1.4 MGD to 120,000 gpd. Coca Cola of New England consumes 307,000 gpd. Stoneyfield Farms, Inc. consumes 223,000 gpd. Among the other high use connections are: three hospitals; two nursing homes; two Laundromats; a 752 MW natural gas-fired, gray-water cooled, electric generating station; a county prison; an airport; a mall; a hotel and convention center; and two manufacturing facilities.

C. Transfer of Ownership

- 1. The system ownership is not proposed to be transferred.

II. System Side Management

A. Water Meter

1. Source and Other System Side Meters

- a) No later than the source activation date, meters will be installed on each water source.
- b) No later than the source activation date, a distribution meter will be installed to measure flow at the point of entry into the water system.
- c) An irrigation well is not proposed.
- d) Make, model, size, and flow range of proposed meters for each new and existing water source and other system side meters: The existing Lake Massabesic raw water flow

meter is a 48-inch BIF Universal Venturi, Model UVT-C1 equipped with a Foxboro Model IDP10-T22C21F-M1L1V, scaled at 0-60 MGD.

The proposed Merrimack River radial collector well raw water meter and distribution meter make, model, size, and flow range will be determined in the upcoming project design phase.

e) Beginning no later than the source activation date, source meters and other system side meters will be read: Source meters will be monitored constantly by SCADA with recorded daily totals.

Service Meter Installation, Reading, and Maintenance

- a) Service meters are installed on all service connections, all points, of transfer to consecutive water systems, and privately owned redistribution systems.
- b) Service meters will be read: Every 90 days for most residential customers. High use customers have their meters read monthly.
- c) Service Meters will be read by a combination of: (1) walk by read (2) drive by read. MWW currently has approximately 18,000 radio-read meters in place and is currently in the process of converting remaining service meters, approximately 12,000, to radio-read units.
- d) It is expected it will take less than 90 days to read 30,000 service meters in the system.
- e) Service meters have been and will continue to be maintained in accordance with II.A.2.e), below. Approximately 65% of domestic meters are 0 to 30 years old, 30% are 32 to 43 years old and 5% are 36 to 55 years old.

2. Meter Selection, Installation, and Maintenance

- a) All meters will be AWWA certified, with the exception of b), below.
- b) AWWA does not have standards for magnetic flow meters. If a magnetic flow meter is proposed, the meter make, model, size, and manufacturer specifications will be forwarded to the NHDES Water Conservation program for review. The meter will not be installed until receiving approval for its use.
- c) The selected size of the meters will be based on flow rates.
- d) Meters will be installed as specified by the manufacturer including requirements for horizontal or vertical placement, distance of straight run of pipe upstream and downstream of the meter, and strainer installation. If the manufacturer does not supply installation specifics, meters will be installed in accordance with the "Manual of Water Supply Practices M6, Water Meters-Selection, Installation, Testing, and Maintenance," (American Water Works Association, 2012).
- e) The following meter testing and calibration schedule or meter change-out schedule will be implemented. If the manufacturer's accuracy warranty extends

beyond the below schedule, the meter will be tested or changed-out no later than the warranty expiration date.

Meter Size (inches)	Testing Rate (yr)
<1"	10 yrs
1" - 2"	4 yrs
3"	2 yrs
>3"	1 yr

f) A log of the date meters were installed, tested, calibrated, repaired, and replaced will be maintained and calibration certificates will be kept on file.

B. Water Balance & Water Audit.

1. The system currently has service meters installed. The previous year's water balance (system input volume – authorized metered consumption) is attached to this WCP and will continue to be reported to NHDES yearly. 2013 Percent Water Balance is 12.7%. See Appendix C.
2. The yearly water balance will be reported to NHDES using the NHDES online water balance reporting tool, and will be submitted no later than March 1. (The electronic reporting form is located on the Water Conservation homepage of the NHDES website.)
3. The water system will prepare and submit a water audit and response plan if more than 15% of system input volume cannot be accounted for by authorized metered consumption. The response plan will identify how the water system intends to reduce losses to below 15% within two years.
4. Water audits will be calculated in accordance with "Manual of Water Supply Practices M36, Water Audits and Loss Control Programs" (American Water Works Association, 2009).

C. Leak Detection

1. Description of the system's leak detection program (ex. acoustic leak detection, zone meters, night flow analysis) to be implemented within one year of source approval: MWW applies for annual grants to contract for leak detection surveys by correlation. In 2014, MWW received a grant and engaged A. Pyburn & Sons, Inc. to survey 85 miles of distribution mains. Twelve leaks were identified and repaired within days of identification. In 2015, MWW was awarded a grant to perform leak detection on 300 miles of main, which will be performed by A. Pyburn & Sons, Inc. in January and February 2015. Additionally, MWW performs its own

leak detection surveys when grant money is not available. MWW staff seek out leak using ground listening microphones at night and will typically cover one quarter of the distribution system per year. Also, MWW routinely walks cross country mains and bridge-suspended river crossings in areas where leaks could go undetected.

2. Non-metal pipes will either be GPS located and stored in a GIS system or equipped with detectable tracer tape or detectable tracer wire during new installation.

3. Leak detection will be conducted in accordance with "Manual of Water Supply Practices M36, Water Audits and Loss Control Programs" (American Water Works Association, 2009).

4. Leaks will be repaired within 60 days of discovery unless a waiver is obtained in accordance with Env-Wq 2101.09.

5. A log of all leaks will be maintained including the date the leak was discovered, the date the leak was repaired, the type of leak (ex. service, main, hydrant, valve), the size of leak (gpm), and the closest street address.

D. Pressure Management

1. The design pressures of the system are from 27 psi to 147 psi.

2. The system was designed with pressures over 100 psi because such pressure is required to provide adequate service to the West Side of Manchester. The high pressure main crosses the Merrimack River at less than elevation 130' and then climbs to neighborhoods on the West Side at elevations as high as 280'. Service connections with pressure greater than 80 psi are required to have pressure reducing valves per BOCA Code. Owners of properties with service connections having pressure greater than 100 psi, or less than 30 psi, are required to execute a *Special Agreement for Water Service* with MWW that is recorded at the appropriate registry of deeds.

III. Consumption Side Management

A. Conservation Rate Structure and Billing

1. Within two years of installing all service meters or within five years of source approval, whichever is earlier, a conservation rate structure will be implemented. Customers will be charged based on usage and the rate per unit of water will be uniform (ex. \$4.00/1000 gallons of water) or increase with usage (ex. \$4.00/0-500 gallons of water, \$4.50/ 501-1000 gallons of water).

2. The current rate structure is as follows: For residents of Manchester - \$1.415 per 100 CF for the first 60,000 CF, then \$1.194 per 100 CF over 60,000 CF. For customers outside of Manchester - a single uniform rate of \$1.627 per 100 CF. MWW is currently in the second year of a five year plan to phase out reduced rate for usage greater than 60,000 CF, at which time Manchester residents will pay a single uniform rate.

3. Irrigation water will be billed at the same rate. Customers have the option of installing a deduct meter for irrigation, which affects only their sewer bill. Regardless whether a customer has a deduct meter, the customer receives only one bill and pays the same rate for all water.
4. The irrigation rate structure will be as follows: Does not apply.
5. Upon implementation of the rate structure, customers will be billed quarterly. High use customers will be billed monthly.

B. Educational Outreach Initiative

1. No later than the source activation date, the system will begin distributing water efficiency outreach materials twice a year with bills. The materials distributed will be either NHDES Water Efficiency Fact Sheets located at <http://des.nh.gov/organization/commissioner/pip/factsheets/dwgb/index.htm#efficiency> or EPA WaterSense materials located at <http://www.epa.gov/watersense/>.
2. The system will maintain a log indicating how the system has complied with III. B., above. The log will include dates the outreach and education actions were taken and what was done.
3. MWW is a WaterSense partner.
4. MWW has sponsored a water themed science program for 1,300 third and fourth graders at Manchester's public elementary schools since 1994. This program includes classroom presentations for each grade level, water treatment plant tours, a citywide third grade poster contest, and fourth grade water science fairs. MWW annually budgets more than \$12,000 for the program and receives donations from a number of local businesses. MWW employees and other volunteers assist in the presentations and tours as well as serve as judges.

IV. Reporting and Implementation

- A. Upon installation of all service meters, and by no later than March 1 of each year, a water balance for the previous year will be submitted to NHDES using the electronic reporting form located on the Water Conservation homepage at the NHDES website (www.des.gov).
- B. Upon source approval and receiving a Water Use ID number, the water system will report monthly production volumes, quarterly to the NHDES Water Use Registration and Reporting Program. Monthly means once every calendar month, but not sooner than 27 days after and no later than 33 days after the previous reading.
- C. The water system will submit a form supplied by NHDES once every three years from the date of approval of the water conservation plan documenting how compliance with the requirements of Env-Wq 2101 *Water Conservation* are being achieved. The system may attach the meter, leak, and outreach and education log to the form or fill out the form manually.

Appendix A Definitions

Authorized metered consumption: billed metered water plus unbilled metered water.

Community water system (CWS): a public water system which serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents.

Consecutive water system: a public water system that buys or otherwise receives some or all of its finished water from one or more wholesale systems for at least 60 days per year.

Final Source Approval: the date of final well siting approval or the date of issuance of the large groundwater withdrawal permit.

Large community water system: a community water system that serves more than 1,000 persons.

Privately owned redistribution system (PORS): A system for the provision of piped water for human consumption which does not meet the definition of a public water system and meets all of the following criteria:

- (1) Obtains all of its water from, but is not owned or operated by a public water system; (2) serves a population of at least 25 people, 10 household units, or 15 service connections, whichever is fewest, for a least 60 days per year; and (3) has exterior pumping facilities, not including facilities used to reduce pressure, or exterior storage facilities which are not part of building plumbing.

Public water system (PWS): a system for the provision to the public of piped water for human consumption, if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year.

Small community water system: a community water system that serves 1,000 people or less.

Source activation date: the date the source is placed into use.

System input volume: the volume of water input to the water supply system after treatment, analysis, and storage.

Water balance: the difference between the system input volume and authorized metered consumption.

Water conservation: any beneficial reduction in water losses, waste, or use.

Wholesale system: a public water system or an industrial, commercial, or institutional (ICI) water user that treats source water and then sells or otherwise delivers finished water to a consecutive water system or privately owned distribution system.

Appendix B Notification Process

Public Notification Instructions

Within 10 days of submitting the conservation plan to NHDES, the applicant is required to provide a copy of the plan via certified mail with return receipt requested to the governing board of the municipality in which a proposed source is located, all municipalities that will receive water from the water system (if any), all wholesale customers (if any), and the regional planning commission serving the location of the proposed source. In most cases, only the municipality and the regional planning commission will require notification. All signed copies of the certified mail return receipt (the green card) must be forwarded to NHDES.

Additional Attachments

The applicant must provide the governing boards with a summary of the requirements of Env-Wq 2101, which may be found at http://des.nh.gov/organization/divisions/water/dwgb/water_conservation/index.htm, and request that the governing board amend local site planning requirements to reflect the requirements of Env-Wq 2101 or to promote water efficiency.

Notification of Consecutive Water Systems and Privately Owned Redistribution Systems

Within 5 working days of obtaining final approval of the source from NHDES, the system is required to notify any consecutive water system or privately owned redistribution system receiving water from the system, that pursuant to Env-Wq 2101.13, the systems must implement a water conservation plan and should contact the NHDES Water Conservation Program using the contact information below.

NOTICES REQUIRED UPON PLAN SUBMISSION:

1. Location of Source

Town of Hooksett, New Hampshire
35 Main Street
Hooksett, NH 03106

2. Municipalities Receiving Water

Town of Auburn
47 Chester Road
Auburn, NH 03032

Town of Bedford
24 North Amherst Road
Bedford, NH 03110

Town of Derry
14 Manning Street
Derry, NH 03038

Town of Goffstown
16 Main Street
Goffstown, NH 03045

Town of Hooksett
35 Main Street
Hooksett ,NH 03106

Town of Litchfield
2 Liberty Way
Litchfield, NH 03052

Town of Londonderry
268B Mammoth Road
Londonderry, NH 03053

City of Manchester
One City Hall Plaza
Manchester, NH 03101

3. Regional Planning Commission
Southern New Hampshire Planning Commission
438 Dubuque Street
Manchester, NH 03102

4. Wholesale Customers

Grasmere Village Water Precinct
41 Center St.
Goffstown, NH 03045

Central Hooksett Water Precinct
32 Industrial Park Drive
Hooksett ,NH 03106

Town of Derry
14 Manning Street
Derry, NH 03038

Pennichuck East Utility, Inc. (Includes 6 Consecutive Systems)
25 Manchester Street,
Merrimack, NH 03054

NOTICES REQUIRED UPON SOURCE APPROVAL (Consecutive and Privately Owned Redistribution Systems)

Grasmere Village Water Precinct (2 Consecutive Systems)
41 Center St.
Goffstown, NH 03045

Central Hooksett Water Precinct
32 Industrial Park Drive
Hooksett ,NH 03106

Town of Derry
14 Manning Street
Derry, NH 03038

PEU / Smythe Woods
PEU / Londonderry
PEU / Springwood Hills
PEU / Brook Park Estates
PEU / Little Pond Estates
PEU / Powder Hill
Pennichuck East Utility, Inc.
25 Manchester Street,
Merrimack, NH 03054

Saint Anselm College
100 Saint Anselm Drive
Manchester, NH 03102

Manchester VA Medical Center
718 Smyth Road
Manchester, NH 03104

Hillsborough County Complex:
Toni Pappas, Chairman of Board of Commissioners
Ellen Ann Rovinson, Director
Office of Adm and Finance
329 Mast Rd STE 114
Goffstown, NH 03045

Wellington Hills Apartments:
Mark Rosen
Wellington DHC LLC
c/o Dawn Homes Management LLC
20 Corporate Woods BLVD
Albany, NH 12211

Bedford Hills:
Richard Anagnost
AV Bedford LLC
c/o Anagnost Companies
1622 Elm St 2nd FL
Manchester NH 03101

Appendix C

Annual Production and Consumption of Water

*Water Consumption is based upon metered consumption and does not include system losses, fire protection or water department uses. Per capita consumption is based upon estimated population of 159,000.

Percent of metered consumption	87.3%
Percent of accounted for non-metered consumption	8.5%
Total percent of accounted for water consumption	95.8%
Per Capita Consumption	94.7 gpd

Water Production (In Gallons)						Water Consumption Metered (In Gallons)						
2013	HIGH SERVICE SYSTEM	LOW SERVICE SYSTEM	THIRD PRESSURE SYSTEM	LONDONDERRY SYSTEM	TOTAL PRODUCTION	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	WHOLESALE	CITY	TOTAL CONSUMPTION	MGD
JAN.	194,837,000	114,340,000	30,293,000	92,690,000	432,160,000	120,178,916	144,332,584	18,267,656	66,278,784	7,039,428	356,097,368	11.5
FEB.	174,873,000	101,313,000	24,030,000	82,867,000	383,083,000	104,203,132	161,400,448	18,703,740	69,596,912	15,915,196	369,819,428	13.2
MAR.	190,939,000	114,260,000	26,186,000	96,625,000	428,010,000	148,660,512	163,682,596	17,818,856	69,943,236	1,122,000	401,227,200	12.9
APR.	198,087,000	126,721,000	26,398,000	93,570,000	444,776,000	114,313,848	136,394,808	18,789,760	73,060,900	5,102,108	347,661,424	11.6
MAY	257,534,000	153,883,000	45,548,000	136,269,000	593,234,000	100,671,824	164,215,172	19,602,836	84,440,972	12,923,944	381,854,748	12.3
JUN.	272,627,000	163,269,000	47,891,000	139,263,000	623,050,000	180,107,928	165,853,292	22,572,396	101,593,360	4,263,600	474,390,576	15.8
JUL.	296,438,000	176,711,000	53,861,000	150,806,000	677,816,000	160,190,184	157,293,928	22,116,116	90,986,720	9,481,648	440,068,596	14.2
AUG.	300,590,000	206,846,000	63,825,000	158,490,000	729,751,000	165,692,472	202,635,444	23,480,468	100,220,032	48,599,056	540,627,472	17.4
SEPT.	244,041,000	148,530,000	51,203,000	132,870,000	576,644,000	288,511,080	300,114,804	22,923,208	111,078,748	11,980,716	734,608,556	24.5
OCT.	227,147,000	132,888,000	35,537,000	126,720,000	522,292,000	195,533,932	185,124,764	24,455,112	91,082,464	8,863,052	505,059,324	16.3
NOV.	193,622,000	53,683,000	25,760,000	143,972,000	417,037,000	152,411,732	191,960,736	17,709,648	75,563,708	10,507,156	448,152,980	14.9
DEC.	198,659,000	89,542,000	29,762,000	152,398,000	470,361,000	202,313,056	198,996,424	18,233,996	69,685,924	6,503,860	495,733,260	16.0
TOTAL	2,749,394,000	1,581,986,000	460,294,000	1,506,540,000	6,298,214,000	1,932,788,616	2,172,005,000	244,673,792	1,003,531,760	142,301,764	5,495,300,932	15.1
% of TOTAL	43.65%	25.12%	7.31%	23.92%	100.00%	35.17%	39.52%	4.45%	18.26%	2.59%	100.00%	

**-Summary of Water Conservation Rules-
Env-Wq 2101 (formerly Env-Ws 390)**

Applicants applying for permits to develop new sources of water need to be aware that they are subject to water conservation requirements required by RSA 485.61 which became law in July 2002. The information contained below is only a summary of the water conservation rules and is intended to provide an overview of the key requirements specified by rule. A regulated entity or interested person should visit the actual rules located at:

<http://des.nh.gov/organization/commissioner/legal/rules/documents/env-wq2101.pdf>

The law requires that the Department of Environmental Services ("DES") adopt and administer water conservation rules for applicants developing the following type of new water sources:

1. New sources of groundwater for community water systems subject to RSA 485:3;
2. New sources of groundwater for bottled and bulk water operations subject to RSA 485:3;
3. New sources of groundwater that exceed 57,600 gallons over any 24-hour period subject to RSA 485-C; and
4. New sources of surface water associated with projects that require a water quality certification pursuant to Section 401 of the Federal Clean Water Act or pursuant to RSA 485-A:12, IV;
5. Surface water sources that are augmented by a surface water transfer pursuant to Env-Wq 1708.12; and
6. Any consecutive water system or privately owned redistribution system that receives water from any of the above.

A general summary of the requirements of the water conservation rules is provided below.

**Requirements for All Large Community Water Systems and All New Small
Community Water Systems Developing New Sources of Water**

1. Install and maintain meters for all water withdrawals and service connections.
2. Implement a water audit, leak detection and leak repair program in accordance with the "Manual of Water Supply Practices, Water Audits and Loss Control Programs", document identification number AWWA M36, American Water Works Association, 2009.
3. When applicable, development and implementation of response plans to reduce water losses to less than 15%.
4. Implement a rate structure that encourages efficient water use.

5. Implement a water conservation educational outreach initiative.

**Requirements for Existing Small Community Water Systems
Developing New Sources of Water**

1. Either: a) Install source and service connection meters and implement a water audit, leak detection and leak repair program in accordance with the "Manual of Water Supply Practices, Water Audits and Loss Control Programs", document identification number AWWA M36, American Water Works Association, 2009. Complete a system-wide leak detection once every two years; or c) implement a night flow analysis program using a high resolution distribution meter.
2. Repair all leaks within 60 days of identification.
3. Implement a water conservation educational outreach initiative.

**Requirements for Applicants Developing New Sources of Water for
Industrial, Commercial, or Institutional Water Uses**

1. Install water meters for all water sources.
2. Retrofit or replace single pass water-cooling systems when feasible based upon an economic analysis that includes a four-year payback period.
3. Install controls to stop the overflow or discharge of water to waste when feasible based upon an economic analysis that includes a four-year payback period.
4. Identify water conservation best management practices or best available technologies that may be applicable to the types of water-using processes at the subject facility, and implement these measures when feasible based upon an economic analysis that includes a four-year payback period.
5. For all new lawn areas, install six (6) inches of loam and devices to shut-off automatic irrigation systems when not needed.

For more information about the water conservation rules, contact Stacey Herbold at (603) 271-0659 or via email at stacey.herbold@des.nh.gov.